

CLAIMS SHOWING CHANGES

1 1. (twice amended) A routing system for distributing packets in a network, wherein the  
2 packets originate at a source and are returned to a destination, both source and destination  
3 external with respect to the routing system, comprising:

4 a plurality of [port adapters] means for transferring packets to a destination and  
5 from a source[that receive the packets];

6 a plurality of route processing engines; and

7 a mechanism that performs a hashing function on at least a portion of network  
8 layer information, in the packets transferred to the routing system, to determine [a] an  
9 approximately even distribution of the packets to the route processing engines for proc-  
10 essing by the engines, and

11 means for determining packets belonging to a same flow and their original order  
12 from the network layer information of the packets, the network layer information includ-  
13 ing at least the same source/destination and protocol,

14 means for preserving the original ordered packet flows by modifying the distribu-  
15 tion by sending each ordered packet flow to a single route processing engine [the distri-  
16 bution being such that an original packet flow comprising the packets is preserved].

1 2. (twice amended) The routing system of claim 1, wherein the plurality of means for  
2 transferring packets includes [including] at least one uplink connection to an external  
3 network and at least one data port adapter connected to an external data interface compo-  
4 nent.

1 11. (twice amended) A routing system for distributing packets in a network, wherein the  
2 packets originate at a source and are returned to a destination, both source and destination  
3 external with respect to the routing system, comprising:  
4 a plurality of network interfaces that transfer the packets to a destination and from  
5 a source;  
6 a plurality of route processing engines;  
7 a fabric interconnecting said plurality of network interfaces and said plurality of  
8 route processing engines;  
9 wherein each of said plurality of network interfaces uses a hashing function to  
10 determine a distribution of the packets among said plurality of route processing engines;  
11 and  
12 wherein the hashing function is carried out on at least a portion of network layer  
13 information in the packets, and  
14 wherein the hashing function determines packets belonging to a same flow and  
15 their original order from the network layer information including at least the same  
16 source/destination and protocol, and  
17 means for preserving the original ordered packet flow by sending the original or-  
18 dered packet flow to a single route processing engine  
19 [the distribution being such that an original packet flow comprising the packets is pre-  
20 served].

1 17. (twice amended) A method for selecting one processing engine of a plurality of proc-  
2 essing engines for processing at least one packet, the method comprising the steps of:  
3 hashing [examining] at least a portion of network layer [flow] information of at  
4 least one packet to determine a distribution of the packets to the processing engines;  
5 determining from the network layer information, including at least the  
6 source/destination and protocol, the at least one packet that belongs to an ordered packet  
7 flow, and  
8 selecting the one processing engine to process the at least one packet thereby pre-  
9 serving the ordered packet flow [based upon, at least in part, the portion of the network  
10 layer flow information in such a way as to preserve an original packet flow comprising  
11 the at least one packet].

1 20. (amended) The method of claim [19] 17 , wherein the hash value is computed by  
2 logically XORing the addresses, the port, and the protocol type value.

1 21. (amended) The method of claim 17 [19], further comprising the steps of:  
2 providing a table containing entries for use in selecting the one processing engine;  
3 and  
4 selection one entry in the table specified by an index value, the index value being  
5 based upon the hash value, and  
6 using the index value to direct the selection of the one processing engine for those  
7 related packets that belong to the same packet flow.

1 25. (amended) The method of claim [22] 17, wherein the at least one [original] ordered  
2 packet flow comprises a plurality of [original] ordered packet flows, and the step of  
3 hashing is performed such that only a single respective processing engine is selected to  
4 process respective packets belonging to a respective [original] ordered packet flow.

1 26. (amended) A system for selecting one processing engine of a plurality of processing  
2 engines for processing at least one packet, the system comprising:

3 means for [examining] hashing at least a portion of network layer [flow] informa-  
4 tion of the at least one packet [;] and determining therefrom a distribution of the packets  
5 to be sent to the processing engines, and further determining therefrom packets and their  
6 order that belong to a same flow wherein the information comprises one or more of the  
7 following network information: a network source address of the at least one packet, a  
8 network destination address of the at least one packet, a source port of the at least one  
9 packet, a destination address of the at least one packet, and a protocol type value of the at  
10 least one packet, and

11 means for selecting the one processing engine based upon, at least in part, the  
12 portion of the network layer [flow] information in such a way as to preserve an original  
13 packet flow comprising the at least one packet.

1 34. (amended) The system of claim 31, wherein the at least one [original] ordered packet  
2 flow comprises a plurality of [original] ordered packet flows, and the means for hashing

3 carries out the hashing such that only a single respective processing engine is selected to  
4 process respective packets belonging to a respective [original] ordered flow.

1 35. (amended) Computer-readable memory comprising computer-executable program  
2 instruction for selecting one processing engine of a plurality of processing engines for  
3 processing at least one packet, the instructions, when executed, causing:  
4 hashing at least a portion of network layer [flow] information of the at least one  
5 packet[;] and determining therefrom a distribution of the packets to be sent to the proc-  
6 essing engines, and further determining therefrom packets and their order that belong to a  
7 same flow, wherein the network layer information comprises one or more of the follow-  
8 ing network information a network source address of the at least one packet, a network  
9 destination address of the at least one packet, a source port of the at least one packet, a  
10 destination address of the at least one packet, and a protocol type value of the at least one  
11 packet, and

12 selecting of the one processing engine based upon, at least in part, the portion of  
13 the network layer [flow] information in such a way as to preserve an ordered [original]  
14 packet flow comprising the at least one packet.

1 37. (amended) Memory of claim [36] 35 wherein the examining comprises hashing the  
2 portion of the network layer flow information to produce a hash value, and the hash value  
3 is used, at least in part, to select the one processing engine.